# Poster48
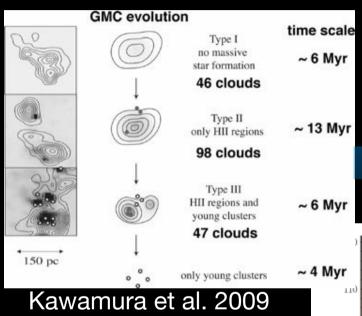
# Embedded Massive Young Stellar Objects (MYSOs) In the Giant Molecular Clouds (GMCs) of M33

**Rie E. Miura (NAOJ/ALMA-J)**

Cecilia Farina(INGT), Narae Hwang (KASI), Daniel Espada, Nobuo Arimoto (NAOJ), Shinya Komugi (Kogakuin U.),Tomoka Tosaki (Joetsu Univ.), Kotaro Kohno (U. of Tokyo), Norikazu Mizuno (NAOJ/JAO), Ichi Tanaka (NAOJ), Kazuki Tokuda, Kazuyuki Muraoka (Osaka Pref. U.),
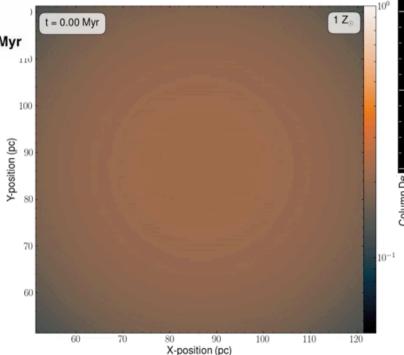
MOIRCS *JHK* images

MOIRCS *JHK* images

# Massive Star/Cluster Formation in a Giant Molecular Cloud (GMC)



Kawamura et al. 2009
GMC~a few 10—100 pc

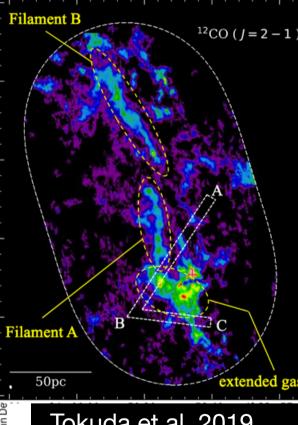ALMA starts to resolve the filamentary structures inside a GMC in the local galaxies (~1pc).

Massive clusters grow via filamentary gas accretion and mergers of less massive clusters.

Tokuda et al. 2019

Howard et al. 2018

# Subaru MOIRCS & ALMA observations

We built a GMC catalog and optical visible young clusters in the nearby spiral galaxy M33 and defined those evolutionary stages.

[GOAL 1] search for MYSOs based on MOIRCS JHK images and also ALMA radio continuum

[GOAL 2] Confirm that the SFR derived from radio continuum is consistent with the one from the identified

We obtained 0".2 (1pc) resolution images:
- MOIRCS JHK images, towards > 11 GMCs
- ALMA Band 3 and Band 6, towards an entire M33 disk.

**Type C**

**Type D**

clusters
MYSOs
CO gas

**Type B**

$A_v$=10mag

J-H

H-Ks

$A_v$=10mag

J-H

H-Ks